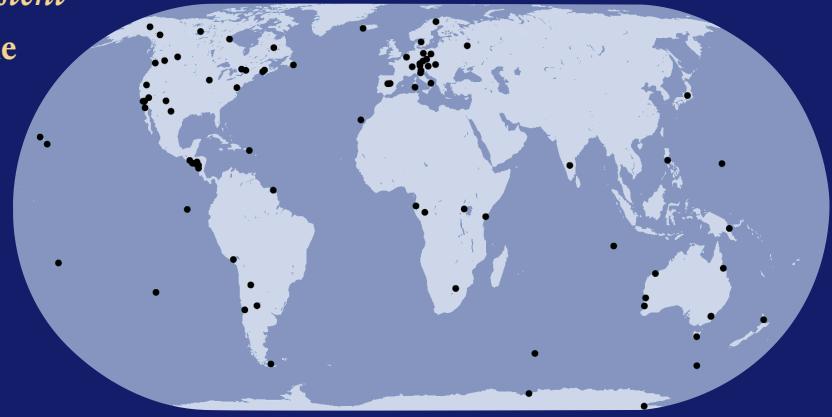




- ◎ All products mutually *consistent* in the IGS realization of the International Terrestrial Reference Frame
- ◎ Continuous development of new *applications* and products in Working Groups and Pilot Projects



**IGS Product Table**  
(GPS Broadcast Values Included for Comparison)

GPS SATELLITE EPHEMERIDES/ SATELLITE & STATION CLOCKS		ACCURACY	LATENCY	UPDATES	SAMPLE INTERVAL
Broadcast	Orbits	~200 cm			
	Sat. clocks	~7 ns			
Ultra-Rapid (predicted half)	Orbits	~10 cm			
	Sat. clocks	~5 ns			
Ultra-Rapid (observed half)	Orbits	<5 cm			
	Sat. clocks	~0.2 ns			
Rapid	Orbits	<5 cm			
	Sat. & Stn. clocks	0.1 ns			
Final	Orbits	<5 cm			
	Sat. & Stn. clocks	0.1 ns			
<i>Note 1:</i> IGS accuracy limits, except for predicted orbits, based on comparisons with independent laser ranging results. The precision is better.					
<i>Note 2:</i> The accuracy of all clocks is expressed relative to the IGS timescale, which is linearly aligned to GPS time in one-day segments.					
<b>GLONASS SATELLITE EPHEMERIDES</b>					
Final		30 cm	~4 weeks	weekly	15 min
<b>GEOCENTRIC COORDINATES OF IGS TRACKING STATIONS (&gt;130 SITES)</b>					
Final Positions	Horizontal	3 mm			
	Vertical	6 mm			
Final Velocities	Horizontal	2 mm/yr			
	Vertical	3 mm/yr			
<b>EARTH ROTATION PARAMETERS</b>					
Ultra-aRapid (predicted half)	Polar Motion	0.3 mas			
	Polar Motion Rate	0.5 mas/day			
	Length-of-day	0.06 ms			
Ultra-Rapid (observed half)	Polar Motion	0.1 mas			
	Polar Motion Rate	0.3 mas/day			
	Length-of-day	0.03 ms			
Rapid	Polar Motion	<0.1 mas			
	Polar Motion Rate	<0.2 mas/day			
	Length-of-day	0.03 ms			
Final	Polar Motion	0.05 mas			
	Polar Motion Rate	<0.2 mas/day			
	Length-of-day	0.02 ms			
<i>Note: The IGS uses VLBI results from IERS Bulletin A to calibrate for long-term LOD biases.</i>					
<b>ATMOSPHERIC PARAMETERS</b>					
Final tropospheric zenith path delay		4 mm	~4 weeks	weekly	2 hours
Ultra-Rapid tropospheric zenith path delay		6 mm	2-3 hours	every 3 hours	1 hour
Ionospheric TEC grid		2-8 TECU	~11 days	weekly	2 hours; 5 deg (lon) x 2.5 deg (lat)
Rapid ionosphere TEC grid		2-9 TECU	<24 hours	daily	2 hours; 5 deg (lon) x 2.5 deg (lat)

The foundation of the International GNSS\* Service (IGS), formerly the International GPS Service, is a global network of over 350 permanent, continuously operating, geodetic-quality GPS and GLONASS tracking sites. The station data are archived at three Global Data Centers and six Regional Data Centers. Ten Analysis Centers regularly process the data and contribute products to the Analysis Center coordinator, who produces the official IGS combined products.

The Central Bureau is responsible for day-to-day management of the IGS following policies set by the IGS International Governing Board. The IGS classic product set — satellite orbits, clocks, Earth rotation parameters, and station positions — is augmented by newer products borne from IGS Working Groups and Pilot Projects.

\*Global Navigation Satellite System

CBIS <http://igsch.jpl.nasa.gov>  
CDDIS <http://cdsdis.gsfc.nasa.gov>  
IGN <http://igs.ensg.ign.fr>  
SIO <http://sopac.ucsd.edu>



IGS outreach activities are organized by the Central Bureau, which is sponsored by the National Aeronautics and Space Administration (NASA) and managed for NASA by the Jet Propulsion Laboratory (JPL) of the California Institute of Technology.